

Claims:

1. A low-height dual or multiband antenna having the following features:
  - 5 - at least two flat antenna elements (3a, 3b) are provided for operation in two frequency bands which are offset with respect to one another,
  - the two flat antenna elements (3a, 3b) are aligned parallel, or at least approximately parallel, to one another,
  - 10 - the size of the at least two flat antenna elements (3a, 3b) is tuned to the frequency bands to be transmitted,
  - the size of the at least two flat antenna elements (3a, 3b) decreases from bottom to top,
  - 15 - the flat antenna element (3b) is in each case formed on the flat antenna element (3a) for transmission in a higher frequency band range, and the flat antenna element (3a) is intended for transmission in a frequency band range which is lower than this,
  - the dual or multiband antenna formed in this way is arranged or can be positioned on a metallic base surface or base plate (7),
  - 20 - the flat antenna elements (3a, 3b) have a short circuit (11a, 11b) on one face, preferably on a narrow face (9a, 9b) aligned in the same direction, such that one flat antenna element (3b) for transmission in a higher frequency band range is short-circuited via the short circuit (11b) to the flat antenna element (3a) for transmission in a lower frequency band than this, and the flat antenna element (3a) for transmission in the lowest frequency band range is connected or can be connected via a short circuit (11a) to the metallic base surface or base plate (7),
  - 25
  - 30
  - 35

**characterized by** the following further features:

- the dual or multiband antenna is essentially in the form of an integral stamped and bent metal part, and

- 13 -

- for this purpose, the antenna has, as an integral component, at least two flat antenna elements (3a, 3b) which are electrically connected via a short circuit (11b) which acts between them, and
  - 5 - at least the lowermost flat antenna element (3a) for transmission in the lowest frequency band and/or at least a relatively lower flat antenna element (3a, 3b) for transmission in a frequency band which is lower than an upper frequency band has or have adjacent to its or their antenna element surface (103a, 103b) antenna element vanes (203a, 203b) between which the respective flat antenna element (3b, 3c) for transmission in a frequency band which is higher than this comes to rest in a plan view of the antenna.
  - 15
2. The antenna as claimed in claim 1, **characterized** in that a feed line (25) which runs from underneath to the lower face of the flat antenna element (3b) which is arranged at the top is, furthermore, likewise in the form of a stamped and bent part which is integrally connected to the remaining parts of the antenna formed in this way.
- 20
- 25 3. The antenna as claimed in claim 1 or 2, **characterized** in that the flat antenna element (3a) which is arranged at the bottom is provided with a short circuit (11a) which forms a part of the antenna and is connected via a bending line (21a) to the antenna element surfaces (103a) of the flat antenna element (103a).
- 30

- 4.. The antenna as claimed in one of claims 1 to 3, **characterized** in that a recess (27) which is in the form of a slot is incorporated in the flat antenna element (3b) arranged at the top, to be precise forming a feed line 25, which is curved downward over a bending line, essentially at right angles to the plane of the
- 35

- 14 -

flat antenna element (3b).

5. The antenna as claimed in one of claims 1 to 4,  
**characterized** in that the end edges (35) of the antenna  
5 vanes (203a, 203b) run at right angles to the  
longitudinal edges of the antenna vane.

10 6. The antenna as claimed in one of claims 1 to 4,  
**characterized** in that the end edges (35) of the antenna  
vanes (203a, 203b) are aligned such that they converge  
from the outer edges toward the center or diverge  
outwards from the outer edges.

15 7. The antenna as claimed in one of claims 1 to 6,  
**characterized** in that those side edges (31) which point  
outward of the antenna vanes (203b) of the antenna  
elements (3b) for higher frequencies run from their  
face which is provided with a short circuit (11b) such  
that they converge toward their free end or diverge  
20 outwards.

25 8. The antenna as claimed in one of claims 1 to 7,  
**characterized** in that those stamped edges (33) which  
point inward of the antenna vanes (203a) of the antenna  
elements (3a) which are provided for the lower  
transmission ranges run from their short-circuit face  
such that they converge toward their free end or  
diverge outward.

30 9. The antenna as claimed in one of claims 1 to 8,  
**characterized** in that the short circuits (11a, 11b)  
have a rectangular shape and preferably extend over the  
entire width of the associated antenna element (3a,  
3b).

35

10. The antenna as claimed in one of claims 1 to 8,  
**characterized** in that the short circuits (11a, 11b) are  
shorter than the width of the antenna elements (3a,

- 15 -

3b).

11. The antenna as claimed in claim 10, **characterized** in that the short circuits (11a, 11b) have a triangular or trapezoidal shape.
12. The antenna as claimed in one of claims 1 to 11, **characterized** in that the antenna vanes (203a, 203b) of the flat antenna elements (3a, 3b) are arranged at different height levels, with in each case one flat antenna element for transmission in a higher frequency band range being arranged above one for transmission in a frequency band range which is lower than this.
13. The antenna as claimed in one of claims 1 to 11, **characterized** in that at least two flat antenna elements (3a, 3b) are arranged with their antenna vanes (203a, 203b) at the same height level.
14. The antenna as claimed in one of claims 1 to 13, **characterized** in that the antenna element vanes (203a, 203b) are preferably provided on their boundary edge which points outward with antenna vane sections (203a', 203b') which are preferably aligned such that they point downward.
15. The antenna as claimed in one of claims 1 to 14, **characterized** in that the antenna is in the form of a triband antenna and, cascaded with respect to it, has a third flat antenna element (3c) which has at least a similar shape to that of the other two flat antenna elements (3a, 3b) and is matched for transmission in the highest frequency band range.